

Grid Packaging Toolkit (gpt)

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providing requirements and feedback**

Packages

- .. **A term we use to mean a collection of files that perform a common function and are installed as a group**
- .. **Packages have versions (e.g. 1.0)**
- .. **Packages well known interfaces**
 - _ **e.g. To do a certain task run**
'\${install_prefix}/bin/foo' which takes a given set of arguments or link with
\${install_prefix}/lib/libfoo.so which provides a given set of functions

Requirements

- „ **Primarily driven by a need to improve the installation and management of Globus software but designed to be a generic package management tool**
- „ **Allow for easy installation, deinstallation, and relocation of packages**
- „ **Allow for binary and source code distribution**
- „ **Allow for multi-flavored builds and installs**

Requirements (cont.)

- „ **Allow for multiple versions of a package to be installed simultaneously**
 - _ **Users can have own versions installed in addition to system versions**
- „ **Handle package dependencies**
 - _ **On other packages, perhaps specific versions**
- „ **Allow real-time package location by users, applications, builds, and system administrators**
- „ **Must support shared libraries**

Our solution...

- „ Use a combination of COTS software, with minor enhancements, to build a toolkit that easily allows developers to package their software in a manner it can be easily managed.**
 - _ RPM, Autoconf, libtool**
- „ Developed wrappers and addition libraries and applications to fill in requirements missed by above tools**
 - _ Eye towards getting these incorporated into tools**

What does it look like?

Installer's viewpoint

- „ Needs to install the gpt software as usual
- „ Package distributions are rpms and srpms
- „ Installer uses gpt_install and gpt_build tools
 - _ These are wrappers around rpm, but do added magic for relocatability.
 - _ Eventually will also handle downloading missing dependencies
- „ gpt_install can be used to relocate

Application's viewpoint

- .. **GPT provides locator library, libgptlocator, and binary, gpt_locator, to enable a package to locate other packages that it depends on**
 - _ **Call locator with the package name, and optionally a version or version restriction (e.g. > 1.1), and locator returns the install prefix of the package**
 - _ **Application is responsible for knowing where things lie under the install prefix.**

User's viewpoint

- „ **gpt_locator has modes of operation that allow a user to setup their environment (PATH, LD_LIBRARY_PATH) to use installed packages.**
 - _ **These get run in system or user's cshrc or profile**

Application Developer's viewpoint

- „ **Need to acquire and install GPT DevKit**
- „ **DevKit has scripts for making starting
gnu autotool files for package**
 - _ will need some hand editing**
- „ **This will provide 'make rpm'
functionality to create the package**

What are the components?

RPM

- .. **RPM is the heart of the management system. It is the engine for installation and deinstallation and maintaining the DB of software location.**
 - _ **Portability fixes (minor)**
 - _ **Enhanced to allow for a hierarchy of databases (a user can have a personal installation tree in addition to the system installation tree) (Planned – some work done)**

gpt_install

- „ **Wrapper around rpm**
- „ **cache install prefixes**
 - _ **RPM stores file locations, not install prefixes**
- „ **handle package relocation**
 - _ **changing paths in shared library .la files**
- „ **do stuff outside of rpm since rpm locks database during installs**
 - _ **Also helps keep rpm cleaner**

GNU Autotools and Libtool

- „ **Used to define build-time macros for locating dependencies.**
- „ **Libtool provides shared libraries**
 - _ cvs version**

GPT and Globus

- „ **Globus will be repackaged into a number of smaller packages that can be independently installed and upgraded.**
 - _ **Number of packages TBD**
- „ **May have meta-packages, a single package encapsulation a number of actual packages**
 - _ **easy installation of common groupings**
- „ **Initial packages for SC00 will be GSI and MDS will others following next year**

Current Status

- „ **Functioning code, some features still in development**
 - _ **Not a product yet**
- „ **Planning on beta release around SC00 with initial Globus packages**
- „ **Questions to Von Welch(vwelch@ncsa.uiuc.edu)**